

## COMMUNITY-BASED INSTRUCTIONAL STRATEGIES, SCHOOL LOCATION, AND PRIMARY SCHOOL PUPILS' ENVIRONMENTAL KNOWLEDGE

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**Abstract:** *The environmental issues we face as individuals and as a society are pervasive and ingrained in our cultural ways of being so that we can no longer look to science and technology to solve these problems alone. Instead, educators have been charged with providing students with environmental education through community-based service learning and educational trips. This study investigated the effects of these two community-based instructional modes relative to traditional instruction and any moderating effect of school location on primary school pupils' environmental knowledge in Oyo Metropolis, Nigeria. The study adopted a pretest-posttest quasi-experimental design. The Environmental Knowledge Test was used to elicit responses from 264 primary-5 pupils across 12 schools. There was a significant main effect of instruction on pupils' environmental knowledge and significant interaction effect of treatment and school location. This suggests that curriculum developers and planners should promote service learning and educational trips for effective teaching and learning of social studies.*

**Keywords:** community-based, educational trips, service learning, environmental knowledge, school location, social studies

### Introduction

Social studies addresses humankind's social, economic, and political behaviours. It is a programme of study that equips learners with the knowledge and understanding of the past in order to cope with the present and plan for the future. The National Council for Social Studies (NCSS, 2015) reports that social studies enables learners to understand and participate effectively in their world, as well as explain their relationship to other people and to social, economic, and political institutions. It is an important subject that provides students with the skills for productive problem solving and decision making as well as for assessing issues and making thoughtful value judgments.

Humans are a powerful force within of the ecosystem. Humans are the most precious resources within the biosphere, but also the most dangerous as their activities,

especially the exploration and exploitation of resources, sustenance and creation of wealth, produce potentially adverse effects (Chinyere & Ohia, 2010). Therefore, if human beings must continue to exist on earth, they must exploit and use natural resources in the most prudent and sustainable manner. Nigeria is facing environmental challenges resulting from the complexity of interaction between the environment and human beings. These environmental challenges include erosion, deforestation, desertification, urban waste, and industrial waste disposal (Gbadegesin, 2012; United Nations, 2011).

To this end, policies have been formulated, and conferences held at local, national and global levels to reduce the menace of environmental hazards. The importance of environmental education also has been acknowledged nationally and internationally (Intergovernmental Panel on Climate Change, 2007; United Nations, 2011). With the recognition of school as a

solid agent of socialization, some scholars have begun to explore strategies to teach environmental education effectively (Ajiboye & Ajitoni, 2008; Gbadamosi, 2012; Olatundun, 2008). While these researchers have made useful contributions to teaching, environmental problems continue to increase (Economic Commission for Africa, 2012; Gbadegesin, 2012).

It also is documented that effective teaching of environmental education is impeded at the school level. The use of such instructional methods, such as lecture method, dictation, and note taking, for a subject that requires interactive techniques for development and sustenance of problem-solving skills seriously impeded the learning outcomes (Okebukola, 2001). Teachers often fail to connect the school with the community needs and circumstances by concentrating only on available instructional materials provided by the school. Traditional instruction, also known as expository mode, focuses on the teaching activity. It involves a one-way flow of information from the teachers to the learners. The teacher does most of the talking or demonstrating while the learners are expected to listen with little or no involvement (Adeagbo, 2013). These methods are inadequate to optimize student learning and do little to encourage them to modify their behaviours positively towards the environment. In order to raise instructional effectiveness, attention should be given to how teaching and learning take place in a school setting. What students learn depends not only on what they are taught but on how they are taught (Ajitoni & Gbadamosi, 2012; Chinyere & Ohia, 2010). Therefore, it is necessary to improve how educators incorporate community-based instruction when teaching environmental education.

Community-based instructional strategy involves using the local community and environment as a starting point for teaching

concepts in language arts, mathematics, social studies, science, and other subjects in the curriculum. Emphasizing hands-on, real-world learning experiences can increase students' academic achievement, develop stronger community ties, enhance appreciation for the natural world, and creates a heightened commitment to active citizenship (Sobel, 2004). Community-based instructional strategy can be categorized into two instructional methods: service learning and educational trips (Smith & Sobel, 2010). Their study determined the efficacy of service learning and educational trips in promoting environmental knowledge among pupils.

Service learning is an instructional strategy that engages young people in solving problems within their schools and communities as part of their academic studies or other intentional learning activities (Chowdbury, 2008; National Commission on Service-Learning, 2002). Service-learning activities provide relevant and motivational opportunities for students to connect the principles and processes of democratic live with practical community problem solving. With guided practice and application of social science knowledge as part of collaborative problem solving, students learn that they can make a difference in the community (Billig, Rook, & Jesse, 2005; Hart & King, 2007). However, most of the research on service learning was conducted in developed countries such as the United States of America and Britain while the few completed in Nigeria were theoretical in nature (i.e. Dugguh, 2013; Olabode, 2010).

Educational trips refer to learning experiences that involve taking learners out of school to places where students can observe first hand and study in a real life setting (Gilbertson, 2013; Mezieobi, Fubara & Mezieobi, 2008). Ajaja (2009) and Olatundun (2008) indicate that educational trips arouse and create interest in learners, sensitize students to the needs of the

community, add instructional variety, provide opportunities for learners to explore their environment and fosters school-community relations. However, educational trips are rarely used in schools due to lack of adult supervisors and a reluctance to assume risk. In addition there is a lack of pre-service preparation in the needed skills, methodology, planning, and evaluation of student learning in the field (Ajaja, 2009; Munoz, 2009). In view of the fact that educational trips have not been effectively utilized in disseminating environmental education to primary school pupils in recent times, it is adopted in this study.

There is mixed evidence about the effects of school location and student learning. Danmole (1998) found that school location was not a predictor of students' achievement. Similarly, Akintunde-Olanipekun (2002) showed that school location did not contribute to students' achievement in environmental education and attitude to environmental issues in chemistry. However, studies by Owoeye and Yara (2011) and Alokun (2010) reported that school location had a significant effect on student learning outcomes in environmental concepts. In the face of conflicting results, there is the need to further investigate the influence of school location on pupils' learning outcomes in environmental education concepts in social studies. Therefore, this study determined the effects of service learning and educational trips in social studies on primary school pupils' environmental knowledge. It also explored the moderating effects of school location on environmental knowledge of the pupils in social studies.

### Hypotheses

**H<sub>01</sub>:** There is no significant main effect of treatment on pupils' environmental knowledge.

**H<sub>1</sub>:** There is significant main effect of treatment on pupils' environmental knowledge.

**H<sub>02</sub>:** There is no significant main effect of school location on pupils' environmental knowledge.

**H<sub>2</sub>:** There is significant main effect of school location on pupils' environmental knowledge.

**H<sub>03</sub>:** There is no significant interaction effect of treatment and school location on pupils' environmental knowledge.

### Methodology

The study adopted a pretest-posttest, control group quasi-experimental design. The participants in this study were made up of 264 primary-5 pupils from public primary schools in Oyo Town of Oyo State. The primary-5 pupils in each school were considered appropriate for this study as they could reflect on what they learnt and on their experiences (Refs). A total of 12 primary schools were purposively selected from four Local Government Areas Atiba, Oyo East, Oyo West, and Afijio in Oyo state. Six schools from urban and peri-urban areas were selected respectively based on the following criteria: being public schools, having one or more environmental problem(s), and being separated from one another in terms of geographical location by at least 12km. The later condition was to prevent pupil-to-pupil interactions across schools. When more than three schools fulfilled these criteria in any of the Local Government Area, simple random sampling was employed to select three schools for the study. One intact arm of primary-5 was used in the selected school. Schools in each local government were assigned randomly to the treatment groups. Oyo metropolises were selected on the basis that they had many environmental problems with little or no government intervention in solving environmental problems in the community.

Students' learning was assessed by the Environmental Knowledge Test (EKT) that contained multiple choice questions with two additional sections adapted from Venas and Doris (2006). Section A comprised demographic data such as sex, age, class, and school. Section B was used to assess students' competence in applying the knowledge that they gained in the programme in solving immediate and future environmental problems. The students were scored dichotomously (correct and incorrect answer). The instrument was validated by the developer with the reliability coefficient calculated was 0.80. In order to ensure that the instrument maintained its status, face, and content validity, items were re-examined using expert reviews. The internal consistency reliability measure was calculated using Kuder-Richardson 20 (KR20) which yielded an internal reliability value of 0.86.

Consent of the parents was obtained to allow their children/wards to participate in the research. Twelve research assistants were employed for the study. The facilitators were trained by the researchers for two weeks. The participating schools were categorized into experimental and control groups by simple random technique. The Environmental Knowledge Test was administered to students in the experimental and control groups prior and after instruction. The pupils in all the groups received eight weeks of instruction as described in the following sections.

#### **Procedure for Experimental Group 1: Service Learning**

**Phase 1: Preparation.** The teacher guides pupils to link the concept with environmental issue in the school/community used. The teacher guides the pupils to mention the areas experiencing environmental issues for the study. Pupils decide on what they would do to solve the problem (services to perform).

**Phase 2: Action.** The teacher assists the pupils to organize the project themselves and develop a work plan and carry out the service such as making of sand bags and planting of trees to control erosion, washing of toilet, and so on.

**Phase 3: Reflection.** The facilitators provide structured time for pupils to think, talk, and write about what they did and observed during the service activity.

**Phase 4: Demonstration/Celebration.** The pupils organize presentations on what they have learnt and how the project has positively affected them.

#### **Procedure for Experimental Group 2: Educational Trips Instructional Strategy**

**Phase 1: Preliminary phase (before the educational trip).** The teacher obtains the factual background and technical skills required to understand the specific purpose of the trip. Teacher gives a brief outline and purpose of the fieldwork to be given to the pupils.

**Phase 2: Teacher's and pupils' activities (educational trip).** The teacher and the pupils visit the study sites such as illegal dump sites, erosion site in the school compound, Old Oyo National Park, and so on. Each pupil writes down what he/she has observed. The pupils ask questions from the teacher and/or community members.

**Phase 3: Follow up/evaluation.** The pupils present and discuss their observations from the environmental problems sites visited in the next class. The teacher evaluates the pupils by asking questions.

#### **Procedure for Control Group: Modified Conventional Teaching Method**

The treatment was based on four major procedural steps, which are sequentially

linked. They are introduction, presentation, evaluation, and conclusion.

**Data Analysis**

Analysis of covariance (ANCOVA) was used to analyse the data obtained in testing the hypotheses using the pretest as covariates. ANCOVA indicated the initial differences among the groups. The multiple classification analysis (MCA) was used to determine the magnitude of the performance of the various groups. Scheffé

post hoc analysis was carried out to determine the source of significant treatment and interaction effects. All hypotheses were tested at 0 .05 level of significance.

**Results**

Table 1 shows that 52.65% of male pupils participated while 47.35% were female. Also, 61.74% of the respondents were in urban while 38.26% were in peri-urban areas.

Table 1  
*Demographic Data*

Sex	N	%	School Location	N	%
Male	139	52.65	urban	163	61.74
Female	125	47.35	peri-urban	101	38.26

Table 2  
*Summary of ANCOVA of Post-Test Environmental Knowledge Scores by Treatment and School Location*

Source of Variance	Hierarchical Method					Partial eta Square
	Sum of Squares	Df	Mean Square	F	Sig.	
Covariates						
Pretest	3.01	1	3.01	.47	.49	0.004
Main Effects (Combined)						
Treatment	384.94	4	96.24	14.99	.00	0.498
School Location	384.79	2	192.40	29.98	.00*	0.498
Treatment X	.15	1	.15	.02	.88	0.000
School Location	48.55	2	74.28	11.57	.00*	0.192

\*Significant at  $p < 0.05$

Table 2 presents the findings of the study with respect to the effects of treatment and school location on pupils’ environmental knowledge. There was a effect of treatment on pupils’ environmental knowledge:  $F(2, 251) = 29.98, p = 0.00; \eta^2 = 0.489$ . This means that the adjusted post-test scores of pupils in the two experimental groups and control are significantly different. Hence, hypothesis 1 is rejected.

Table 3 shows the magnitude of the mean scores according to the treatment groups and school location. Further, multiple classification analysis was carried out to determine the magnitude of the mean scores according to the treatment groups and school location.

Table 3  
*Multiple Classification Analysis of Environmental Knowledge Scores According to Treatment and School Location*

Treatment + Category	N	Predicted Mean		Deviation		Eta	Beta
		Unadjusted	Adjusted for factors and covariates	Unadjusted	Adjusted for factors and covariates		
<b>Treatment</b>							
Service learning	87	12.43	12.42	1.99E-02	1.75E-02		
Educational trips	83	13.96	13.97	1.56	1.56		
Control	94	11.01	11.01	-1.39	-1.39	.42	.42
<b>School Location</b>							
Urban	163	12.41	12.42	5.74E-03	1.87E-02	.00	.01
Peri-urban	101	12.39	12.38	-9.26E-03	-3.02E-02		

Note: R = .42; R square = .18

Table 3 reveals that pupils in the educational trip instructional group had higher adjusted posttest environmental knowledge score ( $M = 13.97$ ; adj. dev. = 1.56) than their counterparts in service learning ( $M=12.42$ ; adj. dev. = 0.01) and control ( $M=11.01$ , adj. dev. = -1.39) respectively. This means that the educational trip was the most effective of the three strategies at improving pupils’

environmental knowledge followed by service learning and control.

Further it is necessary to trace the sources of the significant effect obtained for treatment on environmental knowledge. Hence, the Scheffé post hoc tests were carried out and findings are presented in Table 4.

Table 4  
*Scheffé Post hoc Tests of Environmental Knowledge by Treatment*

Treatment	N	M	Treatment		
			Service Learning	Educational Trips	Control
Service Learning	87	12.42		*	*
Educational Trips	83	13.97	*		*
Control	94	11.01	*	*	

\* Pairs of groups significantly different at  $p < 0.05$

Table 4 shows that there were significant differences ( $p < 0.05$ ) between pairs of groups service learning ( $M=12.42$ ;  $SD=4.25$ ) and educational trips ( $M = 13.97$ ;  $SD=2.71$ ) and control ( $M = 11.01$ ;  $SD=6.32$ ) as well as educational trips ( $M = 13.97$ ;  $SD=3.97$ ) and control ( $M = 11.01$ ;  $SD=7.82$ ). The difference of participation on the experimental group 1 is 4.25; that of group 2 is 2.71 while the control had the higher difference of 6.32. Meaning that participation in experimental 1 and 2 have better spread than those in control group.

**Effect of School Location on Pupils’ Environmental Knowledge**

From Table 2, it is seen that school location had no significant effect on pupils’ environmental knowledge:  $F(1, 251) = .02$ ,  $p=.88$ ;  $\eta^2 = 0.000$ ). This means that there was no significant difference in the environmental knowledge scores of pupils’ from urban and those from peri-urban schools. Hypothesis 2 is not rejected.

H<sub>03</sub>: There is no significant interaction effect of treatment and school location on pupils' environmental knowledge.

location on pupils' environmental knowledge:  $F(2, 251) = 11.57, p = 0.00; \eta^2 = 0.084$ ). Hence, hypothesis 3 is rejected. The direction of the interaction effect is shown in Table 5 and Figure 1.

Table 5 shows a significant 2-way interaction effect of treatment and school

Table 5  
*Estimated Marginal Mean of Treatment and School Location*

Treatment	School Location	Mean
Service Learning	Urban	12.08
	Peri-urban	13.17
Educational Trip	Urban	14.62
	Peri-urban	12.21
Control	Urban	10.83
	Peri-urban	12.01

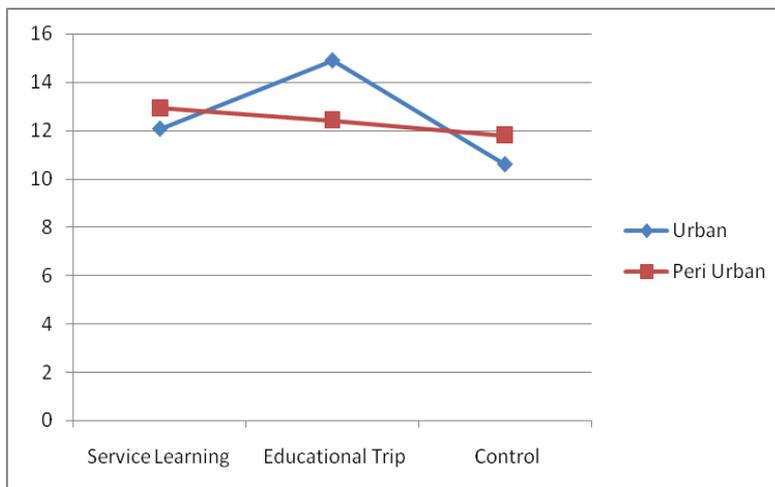


Figure 1. Interaction effect of treatment and school location on environmental knowledge.

Figure 1 shows a disordinal interaction effect of treatment and school location on environmental knowledge in which the effect of the treatment on environmental knowledge of the students does not follow the same trend across the school location. It shows that among pupils exposed to service learning instructional strategy, those from peri-urban schools obtained higher environmental knowledge than their urban counterparts. This trend is the same for the control group where peri-urban pupils also performed better than their urban peers. However, in the educational trip instructional group, urban pupils performed better in environmental knowledge than the peri-urban pupils.

### Discussion

The findings in this study reveal that community-based instructional activities effected pupils' knowledge in environmental education. Details from the results indicate that pupils exposed to educational trips and the service learning instructional strategies performed significantly better than those in the conventional (control) group. Educational trip instructional group had higher adjusted posttest environmental knowledge score ( $\bar{x} = 13.97$ ; adj. dev. = 1.56) than their counterparts in service learning ( $\bar{x} = 12.42$ ; adj. dev. = 0.01). This means that the educational trip was the most effective at

improving pupils' environmental knowledge followed by service learning.

These findings support the findings of Smith and Sobel (2010), Chowlbury (2008), and Olatundun (2008) that learners' performances improve when engaged in community-based education. Community-based education differs from traditional instruction in that it requires a different approach to teaching and learning than one centred on textbooks, lectures, and classroom demonstrations.

Educational trips hold great potential for effective environmental education as they offer learners the opportunity to develop immediate and concrete knowledge of their environment. Educational trips also seemed to have provided these participants with a great deal of motivation for learning. Behavioural psychologists emphasized the importance of learners' active participation in the learning activity and the value of immediate feedback. A correct response needs to be reinforced in the shortest possible interval of time, and that such reinforcement encourages students to continue in their efforts. Participants in the educational trips received such immediate feedback which in turn may have served as a motivation to engage in the learning activities. The findings confirm the views of Ajaja (2010), Smith and Sobel (2010), and Olatundun (2008) who argue that educational trips empower learners to take ownership of their learning as they move from teacher-mediated learning to student driven learning whereby the student develop the capability to construct their own experience (independent learning).

Moreover, the results of this study indicate that students assigned to the service learning condition demonstrated higher environmental knowledge scores than those in the control group. Service learning seems to have provided students with the unique opportunity to participate in the real-life projects and solve environmental issues and

problems in their immediate communities. The result is consistent with Hart and King (2007) conclusion that service learning emphasizes hands-on, real-world learning experiences that can contribute to increase test scores.

Though, the result of this study are inconsistent with the findings of Kenrick (2006) and Miller (2004) that service learning is more effective than educational trips. This finding reflects the submission of Duffin et al. (2007) that students' service learning does not always translate to higher scores on standardized tests of academic achievement per se, but nevertheless are reflective of students' competence and represents learning that is meaningful to parents and students.

The study also revealed that school location had no significant effect on pupils' environmental knowledge. However, the interaction effect of treatment and school location on pupils' environmental knowledge was significant. The result shows that participation in educational trips favoured the learning of urban pupils ( $\bar{x}$  =14.62) while service learning favoured peri-urban pupils' ( $\bar{x}$  =13.17). On the other hand, Owoeye and Yara (2011) and Alokun (2010) reported significant differences between learning outcomes of students in rural and urban secondary schools.

### **Conclusion and Recommendations**

The community-based instructional strategies were found to be effective alternatives to conventional methods of teaching environmental students and hold potential for promoting learning as interesting, real, and fun as well as relevant to community needs. Therefore, it is recommended that social studies teachers in primary schools use service learning and educational trips as instructional strategies for social studies.

Also, the interaction effect of treatment and school location was significant on pupils' environmental knowledge. Service learning and educational trips are equally good for both urban and peri-urban areas; therefore, teachers should use the strategies to connect school with the community. This will offers a way to extend young peoples' attention beyond the classroom to the world as it actually is, and to engage them in the process of devising solutions to the environmental problems they will confront

as adults. Hence, there is the need for total re-orientation of teachers on the use of community-based strategies in teaching and learning of environmental issues and problems in social studies to enhance learning. In short, learners must not only learn about the environment, they must learn in the environment and for the environment as demonstrated in this study. They should also be part of and not apart from the environment.

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